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# THE UNIVERSITY OF TORONTO MEDICAL JOURNAL

*(An Undergraduate Publication)*

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# EDITORIAL

## CONGRATULATIONS.

It is with a certain amount of pride that we notice the success achieved by two of our recent graduates at the last National Board Examinations for the U.S.A., held last fall. Dr. Donald F. Moon headed the honour list, whilst Dr. Jessie C. Gray was one of the six candidates who made the highest grade given in medicine. It is certainly very gratifying to know that our graduates are outstanding even when competing in examinations that embrace the whole of the United States. Again congratulations and *bonne chance* in the future.

* * *

And, too, it is with interest that we survey the results of the Primary F.R.C.S. examinations in Anatomy and Physiology, held this fall. The number of candidates for this important examination is increasing year by year and is gradually gaining in popularity. We are looking forward to the time when this test will rank in importance with the similar English examinations, and for that to become possible, there

is needed a keen interest on the part of the student body. Another factor which will contribute to its development is the probability that hospital appontments will demand membership to the F.R.C.S. (or F.R.C.P.) as a qualification for tenure. Therefore those students who have obtained the primary examinations are to be congratulated, not only for their success, but their foresight. And those who are considering trying the test are exhorted to do so at the earliest opportunity. The following candidates were successful and are to be congratulated: W. F. Greenwood, K. J. R. Wightman, J. E. Whiting, H. J. Sullivan, D. G. H. McDonald, W. L. M. King and A. W. Bagnall of fourth year; C. H. Jaimet and A. J. R. Loos, of Fifth Year; and Drs. R. M. Mitchell and E. H. Botterill.

* * *

We would like to draw attention to the article in this issue by D. G. McKerracher on "The Psychiatric Viewpoint of Medicine." It is of great interest because it indicates the practical application of psychiatry in every-day practice and shows to be amazingly free from forbiding complexities. And, too, it is a gentle reminder that this viewpoint must be kept to the fore when the patient comes to the hospital or the doctor's office. For the mental trauma that a patient receives at either of the above places—places where life and death are dispensed: places where ingenious instruments do mystic things: places where our own bodies are examined and labeled for the discard or ten years more. That is, personality in a medical man is the ability to abolish these fears, to replace them with hope, reassurance, and confidence in the outcome; or as viewed by McKerracher, it is the simple application of psychiatric thinking to every-day affairs. These are points we should recognize, and, having done so, set about using, and improving our methods of dealing with the every-day problems.

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# THE SURGICAL TREATMENT OF THE ENLARGED PROSTATE

L. A. CHUTE, M.A., '35.

The condition of prostatism or as the French have called it, "La Maladie Des Vieilliard's," has no doubt afflicted the same percentage of elderly men since time immemorial, or at least since the time that men lived sufficiently long to enter the so-called prostatic age. This condition, like many others in medicine, was recognized long before its cause was clearly understood. The ancient Greeks and Hindus observed what they called "excrescences" or carnosities at the bladder neck and treated the condition by passing sounds into the urethra. It was not until the middle of the sixteenth century, however, when a Venetian physician, Nicolo Ulassa, discovered the prostate gland that an anatomical basis was found to explain the presence of these obstructions.

The early attempts to overcome this disease resulted in the invention of many ingenious contrivances which could be passed up the urethra in order to re-establish a natural channel for the passage of urine. They were all, however, merely a stab in the dark and frequently the patient's condition was rendered worse instead of better. With the advent of modern surgery and its hand-maidens, anaesthesia and asepsis, a revolution took place in the attack upon this problem. The continental surgeons, under the leadership of McGill, elected to attack from in front by a supra-pubic incision; while the American urologists, led by Young, preferred to attack from below, via the perineal route. More frequently with the discovery of the incandescent light and the development of cutting and coagulating currents, many new and varied instruments have been devised, by the assistance of many technical experts. These three approaches (1) Supra pubic, (2) Perineal, and (3) Trans-Urethral will be discussed more fully later. A few of Randal's figures are included in order that some perspective to the importance of the condition may be obtained.

He states that 7.6% of men in their thirties, 15.7% in the forties, 27% in the fifties, 35.4% in the sixties, and 53.4% in the seventies, suffer from some form of prostatic disease. Thus, every other man who has successfully navigated past the ills that humans are heir to until he has reached the normal span of life must eventually fall into the grip of this malady, the treatment of which entails no small risk to life. It has been more graphically portrayed by Dr. Keyes when he said: "I am in the habit of looking upon a patient in this condition very much as I would regard an individual in an open field, bordered by a deep and rapid river. The individual cannot swim, but an enraged bull is chasing him, and he must either suffer himself to be impaled and gored to death (this is his progressive prostatic disease), or he must cast himself into the flood and trust to some kindly Providence to fish him out (this is prostatectomy)." In order to properly evaluate the relative merits of the different types of surgical procedure alluded to above I shall give a short review of some of the main points concerning the anatomy and pathology of the gland.

**Development.**—Although a difference of opinion exists as to the development of the prostate it is probable that it is formed by the action of two processes. The first of these is a condensation of mesoblastic tissue which surrounds the urogenital sinus; the second an outgrowth of the solid epithelial buds from the sinus itself. The

first of these two processes forms the muscular stroma of the prostate, the second, the epithelial or glandular element.

Lowsley in his study of the embryology of the glandular portion of the prostate states that it develops by the outgrowth of five groups of tubules from the posterior urethra. In the early stages the five lobes are distinct, but later the two lateral and middle lobes to a great extent coalesce. The posterior lobe, lying behind the ejaculatory ducts, on the other hand, remains distinct, and becomes separated from the middle and lateral lobes by a plane of connective tissue. The anterior lobe, which is at first as large as the others, begins to shrink at about the sixteenth week, and before adult life is reached completely atropies. The anterior lobe may in a few instances persist, but the bulk of the gland is formed by the lateral lobes.

**Anatomy.**—This gland has been described as shaped like a Spanish chestnut. Its apex points downwards and forwards and its base lies beneath the bladder. The posterior surface is somewhat flat and rests upon the rectum. It is subdivided by a median groove. The two lateral surfaces are rounded and in contact with the fibres of the levator ani muscle. The apex lies on the triangular ligament and blends with the musculature of the membranous urethra. Piercing the gland from the base to the apex in a plane slightly anterior to its central axis is the prostatic urethra. On the floor of this portion of the urethra is a longitudinal elevation, the verumontanum. On its summit is found a small depression known as the utriculus masculinus as well as the openings to the ejaculatory ducts. The prostatic ducts open between the lateral walls and the base of the verumontanum.

A knowledge of the fascial planes surrounding the prostate is of considerable surgical importance. Like other glands the prostate has a capsule of fibrous tissue which is intimately adherent to its glandular substance. Superficially this capsule blends with the muscle and fibrous tissue of the bladder. The apex of the prostate is linked to the symphisis pubis by the pubo-prostatic ligaments. A sheet of fascia of considerable importance known as the fascia of Denonvillier separates the prostate from the rectum. This fascia is attached below to the apex of the prostate and superior portion of the triangular ligament. It extends upwards to the peritoneum and the pouch of Douglas. Posteriorly the fascia is loosely attached to the rectum but anteriorly closely envelops the seminal vesicles and prostatic capsule. It is between this fascia and the rectum that dissection must be undertaken in the perineal approach to the prostate.

Another factor of surgical importance is the presence of a rich venous plexus in the capsule of the anterior and lateral parts of the gland which make it imperative that the surgeon in his operations does not break through in these regions. Furthermore it is estimated that 50% of men over thirty years of age have phleboliths in these veins and in nearly every specimen over 50 years of age they can be demonstrated. Therefore, surgical proceedures involving these areas are accompanied by the risk of thrombosis and embolism.

**Physiology.**—The physiology of the gland is not definitely understood. It forms a secretion which is favourable to the life and activity of the spermatozoa, but whether or not it is essential for their existence is disputed. Likewise the presence of the prostatic hormone has been reported by some workers to be refuted by others.

**Pathology.**—Turning now to the pathology of prostatic enlargement it must be admitted from the outset that little or nothing is known concerning its etiology and even its pathology is in doubt in many instances. It would be impossible in a paper of this length to discuss the ideas of various investigators and therefore, I shall limit myself to two or three of the commoner

theories concerning the etiology, while adopting Randal's classification of the pathology as giving the most comprehensive picture.

One of the oldest conceptions was that enlargement of the prostate was in reality a neoplasm. The evidence in support of which is a uniform enlargement, not of the entire gland but a localized nodular hyperplasia of encapsulated gland tissue. It conforms to the adenomatous changes seen in the breast or thyroid. Ewing, however. states that this theory is not tenable:—(1) It begins in diffuse multiple foci. (2) Periglandular fibrosis is present. (3) The process is self-limiting.

A second theory championed by Ciechanowsky is that the enlargement is due to hyperplasia following inflammation and stenosing of the ducts which brings about a dilation of the alveoli with a subsequent proliferating reaction. Ewing states that this is possible but clinical evidence of the infection is lacking. Thus, Keys found specific urethritis in only eighteen out of four hundred and thirty-three cases and metastatic infection could be demonstrated in only one-third of the cases.

A third theory is that of sexual over-indulgence. It must be stated, however, that there is no evidence to show that the roué or the American negro are more susceptible to this disease in spite of their salacious habits. In fact, as a rule, the disease appears somewhat less prevalent amongst the coloured than the white races.

Recently Lower has done some very interesting experiments in connection with the hormone theory of prostatic hypertrophy. He believes that the pituitary acts on the interstitial cells of the testes which in turn elaborate a male sex hormone. This is responsbile for the male characteristics among which he includes enlargement of the prostate. He further intimates that the seminiferous tubules exert an inhibiting effect on the pituitary gland and consequently an indirect effect on the growth of the prostate. Briefly, his experiments are as follows:—

If the testes are transplanted into the abdomen, or the seminiferous tubes destroyed by X-ray, an enlargement of the pituitary gland occurs which in turn by its action on the interstitial cells of the testes, causess enlargement of the prostate. In a further series of experiments he makes the abdomens of two rats communicate with each other. If he unites a castrated male (which due to the castration develops an enlarged pituitary) to a normal male he can produce a marked hypertophy of the normal male's prostate. Characteristic changes can be produced in a capon's comb by injecting it with male urine. This is used as a method of assay. Lower suggests that as senility approaches the atrophy of the seminiferous tubules takes the brake off the pituitary gland which in turn stimulates the interstitial cells of the testes causing prostatic hypertophy. In proof of which he gives a series of patients between the ages of seventy and eighty, all of whom by assay had excess of sex hormone and on examination all were found to have enlarged prostates. Finally, he suggests that with increasing knowledge a suitable prophylatic agent may be developed which will remove this disease from that of surgery to that of preventive medicine.

**Pathology.**—The pathology of the prostate has been divided by Randal into four main groups:—(1) Benign hypertrophy. (2) Bar formation. (3) Cancer. (4) Abscess.

The Benign hypertrophies he further subdivides into seven groups as follows:—(i) Simple bilateral lobe hypertrophy. The two lobes meet in the mid-line thus occluding the lumen of the urinary passage. (ii) Solitary posterior commissural hypertrophy. (or the glandular bar of other writers) which if we recall the anatomy is an enlargement of what was the middle lobe. This may herniate through the internal sphincter into the bladder. (iii) Bilateral and commisural hyper-

trophy (the so-called horse-collar type) in which the two lateral and median lobes enlarge. These produce the greatest amount of enlargement and may also herniate into the bladder. (iv) Solitary sub-cervical lobe hypertrophy. This is a proliferation of the glandular tissues just below the mucosa which is usually pedunculated having a very narrow stalk and extends into the bladder. It acts as a ball valve, closing the internal orifice when an attempt is made to micturate. (v) Anterior lobe hypertrophy which is extremely rare. (vi) Subtrigonal or posterior lobe hypertrophy which due to its position does not cause urinary symptoms until it is very large. (vii) A miscellaneous group which includes any combination of the above.

The second main group or the so-called bars, Randal restricts to the conditions where there is a true fibrosis, the glandular bars having been considered above. These cases show a marked sclerosis of the posterior lip of the vesicle orifice and a drawing up of the verumontanum.

Carcinoma of the prostate is the third division and occurs in about 5 to 7% of cases with prostatic symptoms. It does not always commence in the posterior lobe as formerly taught but may arise anywhere within the gland. It metastasizes chiefly to the regional lymphatics and the bones. It rarely invades the rectum due to the Denonviellers fascia.

Martin and Ellis recently described an aspiration method of determining malignancy of the prostate. An ordinary hypodermic syringe is used and the needle forced into the suspicious nodule whereupon suction is exerted with the plunger and while still exerting suction the needle is slowly withdrawn and inserted in a new direction thereby cutting off a small piece of tissue. The pressure in the syringe is now allowed to equalize after which the needle is removed and the tissue is spread on a slide, stained and examined. They claim excellent results from its use.

The occurrence of prostatic abscesses are of two types: acute and chronic. The acute type are not easily overlooked. The chronic type nearly all of which are due to tuberculosis are, however, more prone to be confused with one of the hypertrophies. Other prostatic lessions, not so commonly encountered, are the so-called fibrous prostate or prostatisme sans prostate of the French surgeons. This is probably of infective origin. Prostatic calculi are also frequently found.

**Diagnonis.**—The clinical symptoms of the prostatic syndrome are mental irritation, eroticism and urinary frequency. On examination, the lower abdomen is often seen to show a pyriform swelling due to a distended bladder. It is dull on percussion, fluctuates and pressure on it raises a desire to micturate. A catheter passed even after a patient has voided will frequently draw off a considerable amount of residual urine. If a cystitis is present this may contain pus. Haematuria may be observed due to venus engorgement, nephritis or malignancy. It is essential to observe the patient pass water and to note the character and force of the stream. Finally, remember the criterion of a specialist; a finger placed in the rectum will often give valuable information concerning the condition of this organ. Cystoscopy may be practised to advantage though difficulty may often be found in trying to pass the instrument.

Before attempting any operation for prostatectomy it is essential to examine the patient carefully, paying particular regard to his circulatory system and kidney function. In not a few cases a two stage operation will have to be performed for it has been shown that too rapid removal of fluid from a chronically distended bladder may bring about a fatal anuria. Cardiac and renal findings will influence not only the type of anaesthetic to be employed but in many instances the operation to be performed. The nervous system should also receive due attention for Tabes will often give

bladder symptoms indistinguishable from prostatic obstruction. We are now in a position to describe the three main types of surgical proceedure.

**Surgery.** — The perineal method has been brought to its present stage of perfection, largely due to the work of Hugh H. Young. In his method he makes a V-shaped incision over the perineum with the apex of the V pointing forward. This incision extends only through the skin and sub-cutaneous fat. A second incision is then made in the mid-line to divide the central tendon and the recto-urethralis muscle. This latter is an important step as it permits the rectum to be drawn backwards out of the way thus avoiding the danger of opening into it. A small incision is now made in the uethra and a special retractor is introduced. This is in the nature of two L's, one fitting inside the other. When the leg of the L has been introduced into the bladder one of the two pieces is rotated through 180° thus forming a T. This cross bar which engages in the bladder neck allows the prostate to be drawn down into the wound. Incisions are now made through the lateral walls of the lateral lobes which are then shelled out by means of the finger. If there are posterior or subcervical lobes to be removed these are pressed down into the cavity left by the enucleation of the lateral lobes and removed. Haemorrhage is controlled by packing, irrigating with hot solutions, or by a haemostatic bag. A drainage tube is usually inserted and the wound closed. This operation has the advantage of good visibility except in the case of posterior and sub-cervical lobe hypertrophy. Calculi and bladder diverticula are apt to be overlooked if this method is employed.

The Supra-pubic operation may be done in one or two stages. In the two stage operation a preliminary cystostomy is performed to allow for bladder drainage with the resultant improvement in the condition of this organ and the kidneys before the more serious problem of enucliation is undertaken. An incision is made in the abdominal wall in the mid-line just above the symphysis. The peritoneum is stripped off the bladder and the perivesicle space is packed off with gauze. The size of the incision varies with the surgeon. Some use a small opening and then enucleate the prostate by breaking through the mucosa with their finger. Others prefer to make a large incision in order to visualize the procedure. The latter has the advantage that any bladder diverticula or calculi noticed may be dealt with at the same time. This is probably a good place to emphasize the fact that technically speaking prostatectomy implying as it does the removal of the whole prostate is wrong. It is only the hypertrophied portions which have pushed away the normal glandular structure, forming a psuedo-capsule about themselves, which are shelled out.

Following the enucleation haemostasis is secured in a variety of ways —hot irrigations, packing, or a bag, as in the previous method. The two best methods are probably a haemostatic bag through the centre of which passes a catheter to allow for drainage and the other is by pulling down a lip of mucous membrane from the bladder and sewing it to the floor of the urethra. Most of the bleeding seems to come from a small artery at the bladder neck and this proceedure controls any serious loss of blood, the remainder being a venous oozing. The wound is then closed except for a small opening for the removal of gauze or other haemostatic device and also for drainage.

The trans-urethral method has recently come into vogue again since the process has been perfected to allow for visualization. There have been innumerable instruments devised but I shall endeavour to describe the principle of only three main types. A fenestra is located in the side of a cystoscope into which the hypertrophic tissue bulges. This is then removed in one of three ways: (i) a tubular knife or punch is

forced down inside the resectoscope, withdrawn and an electric cautery inserted to stop any bleeding. This is repeated till the desired amount of tissue is removed. (ii) The tissue may be coagulated first by inserting a multi-polar electrode and passing current until the tissue appears white. The electrode is then removed and the tissue is cut out with a punch. (iii) A cutting electrode may be employed with suitably adjusted current which cuts the tissue and effects haemostasis at the same time. Much experience is required to determine the rate of cutting, and the proper strength of current which is necessary. Otherwise excessive bleeding is encountered on the one hand, or too much tissue is coagulated causing a slough with secondary haemorrhage at a later date.

Some of the undesirable sequelae from any of these forms of operation are haemorrhage, uremia, embolism, cardiac failure, cystitis, epididymitis, incontinence, retention and impotence. In 229 fatal cases Keys found that 30% died of uremia, 22% of haemorrhage, 12% of sepsis, 10% of pulmonary conditions, 9% of cardiac failure, 4% by accident and 3% by general debility. He also states that for the first two types of operation the casual operator has a mortality of from 20 to 30%. The specialist may be able to reduce this to five or ten per cent. These figures serve to emphasize his analogy which was quoted earlier.

In conclusion I shall try to indicate the conditions most suitably treated by one of these three operations. The perineal route would appear to be the most suitable for attacking enlargements of the lateral posterior or median lobes; also for the draining of abscesses. This method has the disadvantage that bladder diverticulae or calculae may be overlooked.

The Supra-pubic route is suited to the intra-vesicle projection of lateral and commissural lobes or for removing sub-cervical polypoid enlargements. It has the further advantage that the stones and diverticulae if present may be dealt with. Drainage in this type of case is not so adequate though the two stage operation is a decided advantage in cases of marked obstruction.

The trans-urethral operation has been practised on all types of enlargement. It would seem to be particularly suited for the removal of fibrous bars, sub-cervical enlargements, and for the small fibrous type of gland. Its advantages have been enumerated by Kretchmer as follows:—(1) The period of illness is much shorter as well as the stay in hospital. (2) The shock is largely eliminated. (3) Patients will seek relief at a much earlier period than at present. (4) A certain number of patients suffering from an inoperable obstruction will no longer be denied the possibility of obtaining relief. (5) The new method obviates a permanent supra-pubic drainage in cases of carcinoma of the prostate. (6) Strictures, contractures and overlooked bars following prostatectomy may be treated.

Medical-at-Home

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# SEDATIVE DRUGS IN OBSTETRICAL PRACTICE

By FRANK S. BRIEN, B.A., M.D.
Burnside Division, Toronto General Hospital.

It is one's duty as an obstetrician to lessen the sufferings of child birth. Exhaustion is more common than most physicians think, especially if labour be at all protracted. The patient who has withstood the added strains of pregnancy and approaches the trial of labour, more particularly if it be her first, with dread misgivings, deserves every consideration. With the modern armamentarium of drugs at one's disposal, it is inexcusable to make no attempt to alleviate her suffering.

However, one should not cast about indiscriminately, using first one and then another of the numerous preparations on the market There are certain principles governing the use of sedatives in labour, and once a drug or combination of drugs is found that fulfils the requisites, it is well to continue with the use of such drugs, either singly or in combination, making variations only to meet individual exigencies as they arise.

Sedatives should not be administered too early in labour. The patient should be instructed that she must expect to undergo a certain amount of pain. Without it the birth of the child is impossible. However, she should be reassured by being told that as soon as she has stood as much pain as she can readily bear she will be given help. As a rule, most patients can get along with relatively less sedative in the day time. When night approaches, and labour promises to be prolonged one should endeavour to procure sleep for the parturient.

In primiparae or slow multiparae, where labour has been definitely established, but where the birth of the baby is not expected for at least four hours, morphia in quarter or sixth grain doses is a very excellent and powerful sedative. It has, however, these disadvantages:

(1) it may stop the pains altogether (hence its rationale in the treatment of threatened abortion or miscarriage).
(2) if the cervix should quickly dilate and the pains speed up, it may lead to difficulty in resuscitating the baby.

Never give it without carefully ascertaining the position of the foetus in relation to the pelvic canal and the degree of dilatation of the cervix.

Morphia is sometimes employed in combination with Scopolamine (Hyoscine), the so-called "Twilight Sleep," or "Freiberg Dammerschiaf." Though very popular ten to fifteen years ago, it is used much less to-day.

Morphia gr. 1/6 or 1/4 and hyoscine gr. 1/000 constitute the first dose. Two hours later hyoscine gr. 1/200 is given, four hours later hyoscine gr. 1/400, six hours later hyoscine gr. 1/400, and etc. The morphine should not be repeated under twelve hours, else it will diminish the effectiveness of the pains too much. The hyoscine dosage is controlled by the effect on the patient, determined chiefly by memory tests. To ensure best results the patient must be away by herself in a darkened room from which all external stimuli are excluded. Morphine-Scopolamine Narcosis is seldom employed at the Burnside, as many patients become quite unmanageable when under the influence of hyoscine.

Much more frequently a Rectal Anaesthetic or Rectal Sedative is used in a slow primipara, particularly if she shows signs of exhaustion before the cervix is fully dilated. This will ensure for her several hours of sleep while the cervix continues to dilate. However, one must keep close watch

on such a patient, as occasionally dilation is completed and the head extruded with little or no warning.

This type of anaesthetic may be begun whenever labour is well established and the cervix is at least two fingers dilated. Soap suds enemata are given until the return is clear. Then Morphia gr. 1/6 and 2 cc. of 50% Solution of Magnesium Sulphate are administered intramuscularly (deep into the buttock). In 20 minutes the Magnesium Sulphate is repeated, but not the morphia. In 20 minutes more, the sedative enema, to be retained, is run into the rectum slowly through a male catheter, passed above the presenting part, if possible. It is made up as follows:

Quinine Hydrobromide..gr. xx in
Alcohol ..... dr. ii.
Ether .....oz. iiss
Olive Oil .....ad oz. iv.

The patient should be on her left side as the solution is administered between pains. She is told not to strain or bear down. A towel or pad is held against the rectum for from ten to fifteen minutes to prevent expulsion of the enema. The room should be darkened and the parturients' ears plugged with absorbent cotton.

Morphia gr. 1/6 and Heroin gr. 1/12, in combination, are used by some obstetricians, but very rarely is such a heavy sedative necessary.

The so-called H.M.C. tablets are administered hypodermically on certain occasions. The No. 1 tablet consists of hyoscine gr. 1/000 morphia gr. 1/4 and cactoid compound gr. 1/60. This constitutes a very heavy sedative and is seldom indicated. More often No. 2 tablet is used, composed of hyoscine gr. 1/200, morphia gr. 1/8, and cactoid compound gr. 1/120.

The drug most frequently prescribed as a first-stage analgesic at the Burnside is Heroin, in 1/12 gr. doses. This may be repeated with perfect safety in from three to four hours, and has been used as often as every hour for three or four doses without ill-effect on mother or child. It is not as powerful a sedative as morphia, but at the same time does not exert a prejudicial effect on the child, should its birth quickly follow the exhibition of the drug. If one feels that a little more powerful sedative than heroin alone is warranted, then it is prescribed in combination with three grains of sodium amytal or a grain and a half of nembutal. Less often, six grains of sodium amytal or three grains of nembutal are given in conjunction with the heroin.

In the United States, in some clinics, sodium amytal alone is used as a first stage analgesic. Van Del of Kansas City recommends an initial dose of fifteen grains, increased to twenty grains as labour progresses. This has not been employed at this clinic. The above writer has also used sodium amytal to advantage in combination with morphia (in gr. 1/6 dosage) and as an adjuvant analgesic to morphia and local anaesthetic in laparotrachelotomy before or during labour.

Nembutal, alone, in doses of three grains, repeated in three to four hours, was tried for a time at the Burnside, but was abandoned on account of the uncertainty of its action. In some cases it left little to be desired as a first stage analgesic, in others it exerted but little effect, and in still others it rendered the patient most unmanageable and almost maniacal on a few occasions.

Ortal Sodium, a similar preparation to the afore-mentioned two barbituric acid derivatives, is recommended highly by some practitioners. Here again, it has not been used in this hospital. It is generally given in three or six grain doses.

Pantopon is an opium derivative that is sometimes used as an analgesic in doses of 1/3 grain. It is held to be less depressing than morphia alone.

Chloral hydrate in ten grain doses, given every hour for three or four doses, has been advocated by some who believe it favours dilation of the cervix. It is a pure hypnotic and may

be combined to advantage with heroin gr. 1 12.

Avertin (tribromethanol) is used by some obstetricians. This is given as a rectal instillation, made up to contain about 60 mgms. of the drug per kilo. of body weight, when the cervix is completely dilated and the head is below the pelvic brim. If necessary, this dosage may be repeated in three or four hours. Obviously, the field of practical usefulness of this drug is rather limited. Further, the margin of safety in dosage is very narrow, the solutions decompose rapidly into a toxic substance, and supplemental administration of an inhalation anaesthetic is nearly always necessary.

In a recent paper in the American Journal of Obstetrics and Gynaecology, W. A. Ruch claims to have used with very beneficial effect a combination of dilaudid (Dihydromorphinone Hydrochloride) gr. 1/32 and scopolamine (gr. 1/130). This, the author contends, is much superior to morphine and scopolamine. He states that eighty per cent. of those receiving the dilaudid combination showed signs of narcosis within ten minutes, and when twenty minutes had elapsed, all but one patient (in a series of 101 cases) were affected; with the morphine combination only two patients (in a series of similar length) noted any effect in ten minutes, and fifteen per cent. required thirty minutes or longer.

Once the second stage of labour is reached, or with the last few pains of the first stage and as the bearing down efforts commence, inhalation anaesthesia is indicated. Chloroform and ether, in the proportions of one part chloroform to two parts ether, by volume, is the most commonly employed anaesthetic at the Burnside. If a few drops are applied to the open mask just as the pain commences, then when the latter has reached its height the patient's senses are appreciably dulled, but the uterine contractions are but little decreased. As the head is crowned the anaesthesia is deepened, but the mask is quickly removed as soon as the delivery of the head is effected. If light surgical anaesthesia is indicated, as in performing a perineorrhophy subsequent to delivery, anaesthesia is induced with C and E. Once past the stage of excitability it is well to change to straight ether. Chloroform alone is practically never employed in this clinic. Ether alone or gas-oxygen in indicated in cardiac cases. In chest conditions (bronchiectasis for example) gas-oxygen is generally used. For Caesarean Section ether with gas-oxygen inducted is the rule. Spinal anaesthesia is extensively used in some clinics in this connection.

After-pains may be troublesome and severe at times. Usually asperin gr. x Codeia gr. i will suffice to relieve them. This may be repeated as often as necessary. Sometimes, however, nothing short of morphia gr. 1/4 will afford the patient ease. In the publication referred to above Ruch speaks highly of rectal suppositories containing dilaudid gr. 1/24 as a source of relief from pains of this type.

Sedative drugs have a very definite role in the management of pregnancy besides the relief of pain in labour. Certain individuals with an unstable nervous constitution are immeasurably benefited by a mixture such as the Mistura Bromidi et Valerianae of the Canadian Formulary. It is made up as follows:

℞

Sodii Bromide ..... gr. xv.
Tincturae Valerianae Ammoniatae ..... dr. ss.
Extracti Glycyrrhizae Liquidi. ..... m iiss
Syrupi ..... m xlv.
Aquae ..... ad dr. ii.

Given in two drachm doses, well diluted with water, two or three times a day, and combined with rest in bed, the above mixture will aid greatly in rendering a patient who was previously irritable and jumpy quite placid and calm.

Hyoscyamus may likewise be combined to advantage with Bromides, as

in the Mistura Bromidi et Hyoscyami C.F., compounded thus:

R/

Sodii Bromidi .....gr. xv.
Tincturae Hyoscyami .....
Elxir Aromotici .....ana m xx.
Syrupi .....m xv.
Aquae .....ad dr. ii.

This is also given in two drachm doses well diluted with water.

A more potent mixture is the Mistura Bromidi et Chloralis C.F. Its composition follows:

R/

Chloralis Hydratis .....
Sodii Bromidi.....ana gr. xv.
Extracti Glycyrrhizae Liquidi.
Elixir Aromatici.....ana m xv.
Spiritus Cordiandri C.F.....m i.
Syrupi .....ad dr. ii.

This is prescribed in one or two drachm doses as the need arises.

In the last few months of pregnancy certain patients for various reasons (back ache, vague abdominal pains, etc.), are unable to sleep. Luminal (Phenobarbital) in doses of one grain, given about an hour and a half prior to retiring, will often ensure a night's rest. If, on the other hand, the difficulty is not in getting to sleep, but rather that of waking up an hour or so after midnight, a grain of phenobarbital taken at bedtime will frequently enable the patient to sleep through until morning.

Sedative drugs play a very definite and important part in the management of the toxaemias of pregnancy, whether they be early or late.

The neurotic make-up of the pernicious vomiter is frequently benefited by luminal given in half grain doses in the morning and afternoon. At night a slightly stronger sedative as luminal gr. i. with or without codeia gr. ss. or gr. i., or nembutal gr. iss, may be necessary to ensure sleep. Veronal gr. v. is also an excellent bedtime sedative. Such a patient may be very upset on admission to the ward with its new faces and surroundings and nothing is better than a rectal sedative to quieten her. This may be made up as follows:

Sodium Bromide .....gr. lx.
Chloral Hydrate .....gr. xxx.
Warm Milk (or Saline)..ad oz. iv.

This is given as a retention enema after the lower bowel has been thoroughly emptied. Its action may be enhanced by the addition of Nembutal gr. iss or Sodium Amytal gr. iii. Rarely one has to resort to Morphia in the control of these cases of early toxaemia.

In the late toxaemias, when eclampsia threatens or has occurred, morphia has long been the drug of choice. In the Stroganoff Treatment it is used in combination with Chloral Hydrate (per rectum) thus:

On admission—Morphia gr. 1/4.
1 hour later—Chloral Hydrate gr. xxx. in 10 cc. of milk and saline, per rectum.
3 hours after admission—Morphia gr. 1/4.
7 hours after admission—Chloral Hydrate gr. xxx. (as above).
13 hours after admission—Chloral Hydrate gr. xx.
21 hours after admission—Chloral Hydrate gr. xx.

While the enemata are being administered whiffs of Chloroform are given to control the convulsions.

McPherson uses morphia alone, in doses of gr. 1/4 given at frequent intervals until the respirations have dropped to ten per minute.

The Dublin School depends on elimination and after the stomach is washed out with saline oz. ii. Magnesium Sulphate is left in, and oz. i. given every hour until the stools are watery.

Magnesium Sulphate has also been used intravenously or intramuscularly in the control of convulsions in doses of 20 cc. of 10% solution given every four or eight hours (till all danger of seizures is over).

Veratrone in 10 minim doses is useful in lowering the Blood pressure and so lessening the likelihood of convulsions.

Sodium Amytal administered intra-

venously has proven to be a very potent drug in controlling convulsions. However, its use is not without danger and one must employ it with great caution.

The routine treatment of eclampsia carried out at the present time in the Burnside is as follows:

1. On admission the patient is given morphine gr. 1/4 per hypo and sodium amytal gr. viiss intravenously.
2. Examination of patient includes catheter specimen of urine; blood pressure; abdominal and vaginal examination to determine duration of pregnancy and progress in labour.
3. If patient is vomiting, a gastric lavage is done, leaving in the stomach one ounce of magnesium sulphate; one ounce is repeated every two hours till the bowels move freely.
4. Enema.
5. Morphia gr. 1/4 Sodium Amytal gr. viiss repeated when patient becomes restless.
6. In marked oliguria 50 cc. of 50% glucose is given intravenously, every 6 hours (as a safe diuretic).
7. Eight to ten hours after the control of convulsions, labour is induced by rupturing the membranes. If the cervix be very thick and not well taken up it may be necessary to insert a Voorhees Bag.
8. Pituitrin may be used in doses of 1/4 cc. if the onset of labour is delayed.
9. Patient to be delivered with forceps when the second stage has started. Gas or ether anaesthesia is used.
10. Morphia gr. 1/4 is given after delivery when the danger of haemorrhage is past. The patient is returned to a warm bed. Water only, by mouth, is given for 24 hours, and milk for the next 24 hours. Following this, a salt-free diet for the next 24 hours or until urine is clear of albumin and the blood pressure is normal.

Complications:

a. Pulmonary Oedema — Atropine Sulphate gr. 1/50 p.r.n.
b. Right Heart Failure—Venesection to 600 cc.
   Digifoline intravenously if indicated.
c. Coma—$CO^2$ combining power and spinal fluid pressure—spinal fluid up to 30 cc. may be withdrawn if under increased tension.

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# WHOOPING COUGH --- SOME PUBLIC HEALTH ASPECTS

A. H. SELLERS, B.A., M.D., D.P.H.

The last quarter of a century has witnessed remarkable progress in improving the public health and particularly the lives of infants, pre-school and school children. In Ontario the mortality among infants in the first year of life has been cut in half, and among other things, deaths from the four acute communicable diseases of childhood — diphtheria, measles, scarlet fever and whooping cough — have in the aggregate shown a persistent decline. It is true too that such decline, particularly in the case of scarlet fever, [1,2,3] began before the application of any specific preventive agent. This fact is of great interest and of uncertain causation and remains a feature of the biology and epidemiology of these diseases for which we have no quite satisfactory explanation. This tendency to decline has, however, been much less marked in the case of measles and whooping cough, and the latter remains a problem of concern both in immediate mortality and morbid complications and in the more remote ill effects of which it may too often be the direct cause.

Due to the unequal declines in mortality from the four acute communicable diseases of childhood, the relative importance of whooping cough has increased and since 1930 has ranked first of the four in importance in mortality in Ontario. The following table indicates the change in the relative importance of whooping cough by five-year periods during the last twenty-five years.

TABLE I.

**Relative Importance of Whooping Cough Among the Four Acute Communicable Diseases By Five-Year Periods.**

**Ontario — 1909-1933.**

| Period | Deaths from All Four Diseases | Whooping Cough Deaths | Per cent. due to Whooping Cough |
|---|---|---|---|
| 1909-1913.. | 5,239 | 1,308 | 25.0 |
| 1914-1918.. | 4,352 | 1,261 | 29.7 |
| 1919-1923.. | 5,275 | 1,368 | 25.9 |
| 1924-1928.. | 3,419 | 1,021 | 29.9 |
| 1929-1933.. | 2,299 | 799 | 34 8 |

**Morbidity.**—In 1578 the first well-defined account of whooping cough was given by Baillou of Paris, who described a prevalent, convulsive cough. Not till 1701, however, was whooping cough recognized as a separate entry in the London Bills of Mortality. The disease is world-wide in its geographic distribution. No climate, country or race is immune, although its extent and fatality varies greatly in different countries. Seasonal incidence is, generally speaking, without such well-defined variations as are characteristic of the other communicable diseases of childhood.

The actual incidence of whooping cough among the population is not ascertainable because a large proportion of cases of the disease are not reported. The studies made by Henderson in London, Ontario[4] and by Hedrich in Hagerstown, Maryland, U.S.A.,[5] demonstrated this fact, and the latter workers found that only 30.5% of the cases of whooping cough seen by physicians and only about 16.8% of all cases were reported. If we apply the more conservative estimate that 25% of cases are reported in Ontario, then the number of cases annually would be in the neighborhood of 16,000, rather than the 4,000 which appear in the records.

The ultimate effects of this morbid-

ity, we can only surmise. But in an analysis of 1,000 fatal cases, Crum[6] pointed out that in 62.7% the attack was complicated by respiratory disease, meningitis, 14.4%, heart conditions 2.5%, digestive complications 7.9%. Only 14.8% were without complication. This fact, that death in almost every instance is due to some complicating factor, lends support to the conception that whooping cough "has consequences which are much more serious than its measurable social ones, viz., physical and psychic troubles of a permanent nature." There is not much doubt that whooping cough leaves many a mark upon infants and children, from which the organism never quite recovers. The gravity of pertussis therefore is scarcely appreciated by either general practitioners or the public and yet it is certain that "the traditional fear inspired by scarlet fever and diphtheria is no more justifiable than the indifference shown by public opinion as regards measles and whooping cough."[3]

Of great importance in an approach to this problem is the characteristic distribution of the cases (reported) by age. This distribution may be contrasted for comparison with the picture for diphtheria to great advantage. The following table presents the experience in Toronto for the years 1925-29.

TABLE II.

**Whooping Cough and Diphtheria Cases Toronto, 1925-1929.**

| | Per cent. Distribution by Age | |
|---|---|---|
| Age | Diphtheria | Whooping Cough |
| Under 1 | 1.5 | 9.3 |
| 1 | 2.7 | 10.0 |
| 2 | 4.7 | 11.9 |
| 3 | 7.1 | 13.7 |
| 4 | 8.1 | 11.7 |
| 5 - 9 | 41.2 | 29.2 |
| 10 - 14 | 15.5 | 2.7 |
| 15 & over | 19.2 | 1.3 |

Of all reported cases of whooping cough then, approximately 57% are in those under the age of 5 years and 96% in those under 10 years of age. The extent of this aspect of whooping cough is further emphasized by the work of Stocks and Karn[7] and the later work of Collins[8] in the United States on morbidity from the acute communicable diseases of children. The latter demonstrated that 44% of children have had the disease by the age of 5 years and 77% by the age of 15 years. In contrast to this while 73% of children have had whooping cough by the age of 10 years, only 8% have had diphtheria by that age.

Whooping cough shows an excess incidence in females, a feature which no other epidemic disease shows.[9] These variations may be related to the differences in formation and development of the larynx or to some sexual difference in resistance and immunity to the disease and its complications. The figures available for Toronto show that the seasonal incidence is not marked, the first nine months of the year showing excess—the actual peak months being August and September.

**Mortality.**—A consideration of the characteristic picture of mortality in whooping cough is essential to hygienists interested in specific prevention. The following table shows the percentage distribution of deaths by age from whooping cough in contrast to that of diphtheria (Toronto experience, 1925-29).

TABLE III.

**Deaths from Whooping Cough and Diphtheria, Toronto, 1925-1929.**

| | Percentage Distribution by Age | |
|---|---|---|
| Age | Diphtheria | Whooping Cough |
| Under 1 | 2.3 | 56.6 |
| 1 | 7.0 | 30.0 |
| 2 | 10.3 | 6.7 |
| 3 | 12.5 | 2.6 |
| 4 | 11.0 | 1.3 |
| 5 - 9 | 40.9 | 2.7 |
| 10 - 14 | 11.1 | 0 |
| 15 & over | 5.0 | 0 |

Thus 56.6% of all deaths from whooping cough occur during the first year of life and 86.6% occur in infants under two years of age. During the years 1928-1932 more than half the

deaths from whooping cough in the first year of life occurred between the ages of 1 month and 6 months. This is distinctly peculiar to whooping cough and very different from diphtheria since infants during the first 6 months of life rarely develop that disease. The great infectivity of the etiological agent of whooping cough, together with the lack of congenital protection from the mother, which obtains in the case of diphtheria, are probable factors in this early onslaught of whooping cough mortality.

Mortality as well as morbidity in whooping cough is much higher among female than male children. This excess is present at all ages for which the numbers are sufficiently large to be conclusive and is greater in the older group than in the younger ones.

The case fatality in whooping cough (deaths per 100 reported cases) is highest in the age group under 1, where it is about 15. For children 1 year old it is about 7.5 and for all under 5 years of age 4.5. (Over 5 it is rather low, viz. 0.2). Indeed at younger ages, whooping cough is much more fatal than measles. As previously mentioned, the great majority of deaths are due to complications or sequelae and over 60% of the fatal complications are of respiratory type.

**Importance of Whooping Cough in Infants and Children To-day.**—Since 1930, whooping cough has ranked in first place in Ontario among the four acute communicable diseases of childhood. This position is one of concern particularly since the infant under 2 years bears the brunt of the ravage. The part played by whooping cough as a cause of death in infancy and childhood is best illustrated by comparing its mortality with that of other causes of death during those early years of life. For example, during the 5 years 1928-1932, whooping cough was responsible for 28% of all deaths from "infectious and parasitic diseases" (International List 1-44) in infants under 1 year of age. The following table shows the part played by whooping cough in mortality from all causes at various ages.

TABLE IV.

**Whooping Cough Deaths and Percent of Deaths from All Causes,**

**Ontario, 1928-1932.**

| Ages. | Number. | Percent of All Causes. |
|---|---|---|
| 1-11 months ..... | 536 | 4.5 |
| 1 year ..... | 171 | 5.7 |
| 2 years ..... | 42 | 3.0 |
| 3 years ..... | 26 | 2.6 |
| 4 years ..... | 13 | 1.7 |
| 5-9 years ..... | 27 | 0.9 |

In the period of life 1-11 months, whooping cough ranks fifth among the chief causes of death; bronchopneumonia, malformation, debility and influenza alone preceding it.

**Prevention and Control.**—The work of MacDonald[10] and others has well-established the place of Bordet-Gengou bacillus in the etiology of whooping cough, and lends further weight to the "cough plate method" of diagnosis (Meyer and Chievetz) in this disease. While this method is cumbersome, it has been shown here and in Europe that during the catarrhal stage of the disease, 80-100% of the plates are positive, confirming the observation that the contagion is greatest during the early stages before a certain clinical diagnosis is possible. At the 6th week, some 10% of cases are still carrying the bacilli, but at the same time it is clearly useless to isolate the child as long as the whoop lasts. This diagnostic procedure if of great value since it effects diagnosis in the absence of the paroxysmal cough.

Some interesting epidemiological features of whooping cough have recently been described in an interesting paper by Stocks,[11] who found that the most probable incubation period is one week, though it may be as short as three days. His work suggested that excluding home, contacts from schools was a questionable procedure. It is doubtless probably much better to keep these children at school under daily observa-

tion and to send them home when the first signs of catarrh or cough appear.

**The ultimate control** of this disease, the full extent of whose actual effects on the young organism is not known, lies in active immunization. This is particularly so since it has been demonstrated that abortive attacks do occur and hence an infant or child may easily be exposed without the parents realizing it. Great success has attended the work of Madsen,[12] Sauer[13] and others in the use of whooping cough vaccine. The consensus of bacteriological opinion is that polyvalent vaccines prepared from freshly-isolated strains only should be used, but dosage is still in question. The most convincing results are those when the vaccine is given three to four months before expected epidemic. The use of convalescent serum in whooping cough in the very young where the mortality is so great has been advocated (Wright) by analogy with measles, but its value is not established. The use of vaccines prophylactically in those exposed is, however, of undoubted value. Early treatment with large doses of freshly-prepared vaccine are necessary. In adopting such a procedure the careful follow-up of reported cases to discover contacts, especially those under 5 years of age, is clearly important.

From the preventive viewpoint, tables II. and III. emphasize a very important consideration, namely, that if vaccination is to be of use, it must be done very early in life. Failure to vaccinate in the first year of life will leave out of consideration 10% of the cases and over 56% of the deaths from this disease. Apart from active immunization, control is very difficult because the disease is highly contagious at a stage when diagnosis is difficult if not impossible. Case fatality is, however, subject to control through proper care and treatment and vaccination of contacts has proven of value particularly in the very young, in aborting an attack.

## References.


1 League of Nations Epidemiological Report, No. 172, 1934.
2 League of Nations Epidemiological Report, No. 173, 1934.
3 Ross, Mary A. C.P.H.J. 23:331. 1932.
4 Henderson, E. C. A.J.P.H. 6:971, 1916.
5 Sydenstricker, E. U.S.P.H. Reports, 44:1537, 1929.
6 Crum, F. S. A.J.P.H. 5:994, 1915.
7 Stocks, P. & Karn, K.N. J. Hygiene, 32:581, 1932.
8 Collins, S. D. U.S.P.H.R. 39:1553, 1934. Also 44: 1929.
9 Young, M. & Russell, W. . Br. J. Dis. Child., 24:15, 1927.
10 MacDonald, H. & MacDonald, G. J. J. Inf. Dis. 53:328, 1933.
11 Stocks, P. Lancet, 224:312, 1934. Also 224:264, 1934.
12 Madsen, T. J. A. Med. 101:187, 1933, and other papers.
13 Sauer, L. W. J.A.M.A. 101:1449, 1933, and other papers.
14 Registrar-General's Annual Reports for Ontario, 1928-1932.



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# A REVIEW OF THE EFFECT OF OPERATIVE TREATMENT OF DUODENAL ULCER ON THE PHYSIOLOGY OF DIGESTION

By PAUL HAMILTON, B.A., '35.

It is taught and experience goes far to prove that duodenal ulcer is primarily a medical condition, most readily amenable to medical measures except in unusual circumstances. It is the treatment of these unusual circumstances that concerns us here, and the sequelae arising as a result of such treatment, which are reflected by disturbed or changed physiological functions.

The conditions which may arise are these:

1. Pyloric obstruction.
2. Perforation.
3. Chronic persistent haemorrhage.
4. The indolent type of ulcer which
   (a) does not heal even on prolonged treatment.
   (b) heals, but continuously breaks down even with the most careful supervision, both by physician and patient.
5. Debility due to presence of ulcer being a factor in the economy of the patient.

In the light of our present knowledge the treatment of choice for such conditions is operative.

The diagnosis having been made and operation having been decided upon, there remains to be considered the choice of operation best suited for the condition and the needs of the patient.

**Physiology.**—Before proceding to a discussion of the effect of the various types of operation on the psysiology of digestion it is expedient to review the normal physiology of the digestive tract, especially that of stomach and duodenum. Following that, the abnormal physiological conditions which obtain in the presence of ulcer can be considered. And lastly the effect of operation on both normal and abnormal physiology can be discussed.

Of the physiology of the digestive tract only that of the stomach and duodenum need concern us here. As a result of the work of Pavlov, Edkins, Ivy and others, gastric secretion has been found to occur in four phases, which may be classified as follows:

1. **Cephalic phase:**
   (a) Psychic secretion due to reflexes by way of the cerebrum, e.g., thought of food and anticipation.
   (b) Reflexes through the thalamus when food is seen, smelled or tasted.
2. **Gastric phase:**
   (a) Mechanical distension of the stomach by food or water or other means causes a secretion of gastric juice.
   (b) Chemical stimulation occurs due to certain unknown secretagogue substances found in the food.
3. **Intestinal phase:** The presence of chyme in the duodenum and small bowel causes a secretion of gastric juice.
4. **Continuous phase:** The stomach secretes gastric juice at the rate of 5-50 cc. per hour, throughout the 24 hours of the day.

The cephalic phase begins on the sight of food or a few minutes after food has been placed in the mouth. At best, however, it forms only about 1/3 the total secretion. It is abolished by section of the vagi, but digestion is not thereby impaired.

The gastric phase of digestion be-

gins within one half to three-quarters of an hour after taking food, and continues as long as food remains in the stomach. This phase of secretion persists after section of the vagi and in the light of Ivy's work appears to be produced by certain secretagogue substances within the food, or made from the food, or made by the stomach in the presence of food. This phase may last for 4-5 hours in unusual cases.

The intestinal phase takes place as described above. Klein claims that this phase of secretion has a latent period of from 2-4 hours, but never produces as much juice as the gastric phase.

But there are some details of the chemistry of gastric secretion which demand attention. Miyagawa from a study of the structure of the stomach finds that the pyloric glands extend 3/10 of the distance from the pylorus to the cardia. After a transitional area about 1 cm. wide, the glands change to those of the fundic type with chief and parietal or oxyntic cells both present. The glands of the pylorus secrete an alkaline mucin while the fundic glands secrete pepsinogen from the chief cells, and hydrochloric acid from the parietal cells. The hydrochloric acid activates the pepsinogen.

It is claimed by Smidt, Savitch and others that the secretagogue substances in the food act on the pyloric mucosa to produce secretion of gastric juice, and the results of Lewisohn in man with subtotal gastrectomy and similar work of Klein, seem to point to such a site for this humeral mechanism of secretion. Priestly and Mann, however, in 1932, in experiments upon dogs by extirpation of the pyloric and pars pylorica of the stomach, concluded that such a humeral mechanism did not exist: in the dog at any rate, and in a brief review of the literature, conclude that it is of minor importance. Ivy and McCarthy, however, using the technique of Savitch with a pyloric pouch and fundic fistula claim to have confirmed the work of this author. And there the matter rests. In man, however, both Klein and Lewisohn strongly urge the existence of such a mechanism.

With regard to the motility of the stomach, it is claimed by Alvarez and supported by Berg that the alimentary canal has the intrinsic property of rhythmic contraction, and further that there is a gradient of intensity of activity from the cardia, ventrally. And in general that has been found to be true. Alvarez goes even further and postulates a "pace-maker" for the gut on the lesser curvature at the cardia. Peristaltic waves begin at this point and pass down the stomach about every 20 seconds in man, the more active waves causing the pylorus to open. There also occurs rhythmic variations in tone which according to Ryle give rise to the sense of appetite. More powerful contractions give rise to the sense of hunger.

Alvarez has also stated that pleasant psychic influences cause more rapid emptying of the stomach and that distention and irritation of the bowel retards emptying of stomach.

There is one other observation that might be included here, namely, that of Brenziger, who stated that contraction waves pass faster along the greater curvature than on the lesser curvature, so that a ring of contraction arrives at the pylorus at the same time.

Ivy, in a recent review of the physiology of the duodenum indicates that its secretions are of slight importance, that little absorption takes place therefrom and that the duodenum exhibits rhythmic segmentation, peristalsis and antiperistalsis. He further states that the duodenum is not essential for good health. Experiments and practice bear out this latter statement adequately.

Some further points concerning normal physiology of the stomach, have yet to be considered. The pancreas begins secreting about 1½ minutes after the beginning of the meal and increases rapidly when food enters the duodenum. This continues for about 3-4 hours. The mode of secretion has been elucidated by Melanby, who has shown that secretin is absorbed in the

presence of bile salts and stimulates the secretion of the pancreas. The pancreatic juice is strongly alkaline in nature. Ivy has claimed that the most probable factor governing the flow of bile from the biliary system is the tone of the dundenum. It is the regurgitation of this alkaline pancreatic juice into the stomach that brings about the reduction of gastric acidity. Burget and Steinberg have indicated in dogs, that this commences about 30-45 minutes after the ingestion of food.

We may now proceed to an investigation of the physiological conditions that obtain in the presence of duodenal ulcer. Hurst and Stewart put forth a very strong case for the so-called ulcer diathesis as a predisposing factor in the production of duodenal ulcer. This diathesis is considered to be present when there is a short, highly motile stomach which empties rapidly and exhibits hypersecretion and hyperchlorhydria. But Ryle in his studies claims that within the normal range there seems to be no association between degree of acidity, rate of emptying and physical fitness, the results depending largely on the nature and conditions of the test meal.

Hurst does claim that at any rate, duodenal ulcer is usually associated with hyperacidity and greater motility, with a delayed emptying rate. The delayed emptying rate, in an uncomplicated case is caused by the failure of the duodenum to relax when a peristaltic wave reaches the pylorus. Ivy believes this hypermotility and delayed emptying is the intrinsic reaction of the stomach and pylorus due to the presence of ulcer, but he makes no attempt to explain the mechanism. The presence of ulcer often also causes spasm, besides the achalasia, or unrelaxation of the pyloric sphincter. Whether achalasia or spasm is caused by the acid factor or the peptic factor in the digestive juice is not settled. It may also be attributed to the mechanical action of food particles. At any rate, it can be definitely stated that there is an increase in gastric and intestinal phases of secretion as a result of retention of food in the stomach. Ivy, produced experimental incomplete stenosis in dogs and found that an initial drop in gastric secretion was followed later by a hypernormal secretion. He believes that this procedure merely prolongs the gastric and intestinal phases of secretion. There is also, as Klein has pointed out, the absence or reduction of the normal regurgitation of alkaline intestinal juices into the stomach as a result of the stenosis. Alvarez also reports that pepsin secretion is usually increased in the presence of peptic ulcer.

Hurst finds that in the presence of ulcer, normal emptying takes place at first and in an uncomplicated case empties more rapidly than normal. But the earliest complication is achalasia, or failure of relaxation of the pyloric sphincter, and when such occurs, emptying in the later stages of digestion is delayed. This explanation accounts for the type of acidity curve usually found: a curve, normal in its initial stages, but indicative of delayed emptying in the later stages.

Alvarez believes that the constant spasm of the pylorus due to ulcer will eventually lead to its hypertrophy. He finds that on relief of the ulcer, atrophy will very often take place, though it is not marked in any case. Besides the presence of ulcer, with its attendant oedema and fibrosis in the immediate neighbourhood, it has also been found that the pyloric antrum is involved in a follicular gastritis. What effect this may have on the physiology of gastric secretions we do not know, but its presence may explain the divergent results obtained by some workers in extirpation of this part.

**Surgery.** — Having discussed the normal physiology of the stomach, and the physiology in the presence of duodenal ulcer, there remains now to be considered the changes in physiology as a result of operation for the abnormal condition. I shall not go into the details of the merits of one operation over another, except where such de-

tails concern us here. There are several operations devised; none are perfect, yet all have their good points and their expert exponents.

The operations devised are as follows:

1. Simple excision of the ulcer.
2. Some form of Pyloroplasty, e.g., Finney's operation.
3. Gastroduodenostomy.
4. Gastro-Jejunostomy.
   (a) anterior with or without local incision of the ulcer.
   (b) posterior, with or without pyloric exclusion.
5. Partial gastrectomy. Billroth 1 and 2, or Polyas' operation.
6. Subtotal gastrectomy.

1. *Local excision.* — Over twenty years ago Moynihan advised local excision of the ulcer. The current opinion seems to be that such a procedure, though very often relieving the condition, does not give a permanent cure. Berg claims that it is of no use. But many surgeons are loth to treat the ulcer without actually attacking the ulcer itself, and so in many cases local excision is practised in conjunction with some other form of operation. For Ariz points out that an ulcer, even after gastro-enterostomy tends to exert an influence and produce spastic deformity and abnormal persistaltic movement.

2. *Pyloroplasty* — The physiological changes brought about by an operation of this type are essentially, relief of the stenosis with consequent alkaline regurgitation and reduced acidity, with a more rapid emptying of the stomach contents. It does not reduce the hypermotility or hyperacidity of the stomach.

3. *Gastroduodenostomy.* — This operation has been advised by Ivy and Fauly because they found, from transplant experiments, that the duodenal mucosa was most resistent to ulcer formation. The operation does not, however, seem to be used in common practice, probably because of anatomical and technical difficulties.

4. *Gastro-enterostomy;* or more specifically, gastro-jejunostomy. This operation is performed with a view to establishing the normal physiological function of the stomach by relieving spasm of the pylorus, reducing the emptying time and hence stasis and hyperacidity allowing free regurgitation of alkaline intestinal contests, and protecting the ulcerated area from gastric contents in order that healing may take place. That such is the course of events is held by Moynihan, Balfour and other exponents of the gastro-enterostomy theory.

The changes brought about by this operation can be discussed under two heads, chemical and mechanical.

*Chemical Changes.*—It seems fairly generally accepted that the great reduction in acidity which occurs following gastro-enterostomy is accomplished by the free regurgitation of alkaline duodenal contents into the stomach. But as Ryle has pointed out in the treatment of uncomplicated duodenal ulcer by operation, the quicker the rate of emptying and the greater the hypertonus of the stomach the greater will be the liability to persistent acidity following operation. That is, the result of the operation will depend somewhat upon the conditions that obtained in the case, prior to surgical treatment. Whether operation actually reduces acid and gastric juice production does not seem to be settled. Steinberg, Brougher and Vidgoff find that after gastro-enterostomy, the concentration of acid secreted is not changed, but that the amount of secretion is slightly reduced. Lindsay and Evans accept Paterson's findings that following gastro-enterostomy, there is a diminution of the total chlorides with an increase in mineral chlorides of the gastric contents. This will, of course, help to aid in the reduction of acidity, but it is not stated whether these inorganic chlorides are formed by the stomach, or are a result of alkaline regurgitation. They further give evidence that achlorhydria develops in many cases of operation, 25% having a temporary achlorhydria, 18% a persistent achlorhydria and 15% develop achlorhydria at some later date.

The temporary achlorhydria is explained by the presence of blood in the lumen of the stomach. Berg also finds that achlorhydria often results in cases of gastro-enterostomy. Lewisohn, on the other hand finds this operation very ineffective in reducing acidity. The only other finding of note with regard to the chemical changes, is the point made by Portis, who demonstrated that the bacterial flora of the gut is not altered by gastro-enterostomy. For some reason, tryptic activity is also increased in the gut, after enterostomy as pointed out by Portis & Portis on the basis of Freudenberg's work; and it is more marked after gastro-enterostomy and pyloric occlusion.

Turning now to the *mechanics of the stomach*, following gastro-enterostomy, it is convenient to recall the thesis of Alvarez, namely that the gut exhibits a graded intensity of intrinsic motility. It will be thus seen that, regardless of the artificial anastomosis, the contraction waves will tend to pass from cardia to pylorus as usual and thence down the duodenum and small gut. The chyme, failing to pass in the normal direction, will be forced out through the stoma. That such is the case seems to be substantiated by radiological findings, for at one time a test meal will pass out through the stoma; at another time by the normal route, and yet again by both openings. The chief result of the operation is the relieving of pyloric spasm and allowing alkaline regurgitation to take place. The relief from symptoms is so sudden, following operation, that Alvarez, Ascanio and Horwitz have been led to conclude that spasm is relieved almost immediately. This, they believe, is caused by food entering the jejunum, which produces antiperistaltic ripples that move up to the pylorus and so tend to diminish the tone of the pyloric sphincter. They have further found some evidence that long continued spasm will lead to hypertrophy of the pyloric muscle, and that some atrophy of the muscle takes place following operation. This is never marked, however. That regurgitation is facilitated is claimed by many, and Burget and Steinberg have found that with a posterior gastro-enterostomy, regurgitation occurs within 15 minutes of food ingestion, and lowers the acidity of the dog from 0.5% HCL to 0.1 or 0.15% in 30 - 45 minutes. Ariz finds that the operation diminishes the motility of the stomach, but like Alvarez claims that it does not exclude the normal pyloric mechanism from working. Gastro-enterostomy is also instrumental in relieving those cases which give a long history of duodenal ulcer and which relatively rapidly develop symptoms of stenosis. That is, the oedema of the ulcerated area is reduced.

Before discussing jejunal ulcer as a complication of gastro-enterostomy, it is of interest to note Holland's findings, that in many cases, though symptoms of ulcer are relieved by operation, yet his patients suffer from vague gastric distress. This distress he believes to be due to a malfunctioning gall bladder, for X-ray findings, laboratory investigation or any other test fail to demonstrate stasis, adhesions, marginal ulcers or any other abnormality connected with the stomach. And in some cases, actual gall bladder derangement has been indicated by X-ray examination. It is interesting to recall Ivy's remark in this connection, that the normal functioning of the gall bladder is due in part to the condition of the duodenum.

We have now approached a point where the problem of gastro-jejunal ulcer can be considered. The occurrence of this condition, as the most baneful sequel to operation, is the great bone of contention between the gastro-enterostomists and the gastrectomists. It is also a difficult topic because it so closely touches the problem of the etiology of peptic ulcer. For this latter reason, only the most outstanding experimental work will be cited.

From the clinical point of view, it is argued pro and con whether gastro-jejunal ulcer occurs often enough to make surgeons seek some other form

of operative treatment. On the one hand Moynihan and Balfour and others obtain good results from gastro-enterostomy. Lewisohn and others on this continent claim that it is a very unsatisfactory procedure. But in a general survey of the literature quoted in this paper, gastro-enterostomy does not seem to be the operation of choice. Both Eusterman and Lake find also that gastro-jejunal ulcer occurs more often after treatment of duodenal than gastric ulcer.

Much experimental work has been done to elucidate the conditions under which jejunal ulcer occurs as a result of gastro-enterostomy. In 1927, Mann and Takats transplanted portions of jejunum, with intact blood supply, from the region where jejunal ulcer usually develops following gastro-enterostomy in man, to the side on the lesser curvature where ulcer usually occurs. This work was done on dogs. They found that in a small number of experiments that a typical jejunal ulcer developed. If the transplants were placed on the body of fundus, ulcer did not develop. There are two factors which enter here, one that the jejunal mucosa is not as resistent to the action of the gastric juices, and too, that the mechanical stress in the area of the lesser curvature is greater. Mann and Ballman have confirmed this result, and also Morton. It has been further shown by these workers that the duodenal mucosa is the most resistent to the action of the gastric juices, as compared with other parts of the small bowel. With this fact at our disposal, the etiology of jejunal ulcer becomes less obscure and it is easier to see why Mann has obtained his results in anastomosis experiments. Mann and Mann and Williamson found that they could produce peptic ulcer in dogs, with fair regularity, by transplanting the bile and pancreatic drainage to the terminal ileum and then doing a gastro-enterostomy. The ulcer always developed, just distal to the suture line of the anastomosis and on the postero-lateral aspect of the gut, at the place where the gastric contents would impinge when passed from the stomach. He further noted that when the ulcer developed, his dogs showed a sudden loss in weight. That the mechanical impinging of gastric contents on the area is of importance is seen by the fact, that if gastric motility is impaired no ulcer develops. The next step was to determine what part of the gastric contents was the most destructive to the jejunal mucosa. Experimentally produced ulcers were formed in the duodenum by feeding acid. By closing the pylorus and doing a gastro-enterostomy, the ulcer healed readily, but not if they were subject to mechanical interference. He then determined that the pancreatic juice was the most potent factor in reducing acidity, the bile juice much less so. This has been confirmed by Ivy and Wright, although this last author believes that the peptic factor is the most potent one, rather than the acid factor. The factors then that go to produce jejunal ulcer are, in order of importance: (1) susceptibility of jejunal mucosa; (2) irritating action of the gastric contents; (3) lack of neutralizing juices from the pancreas; (4) and motor drive of gastric contents. These ulcers also occur more often after anterior than posterior gastro-enterostomy Strauss, Block and Friedman claim that jejunal ulcer can develop in the absence of acid, but they bring forth no evidence to substantiate their claim. That the bile is also a factor to be considered is indicated by the report of Ivy and Kim, in which they record duodenal ulcer formation following obstruction of bile duct and pancreatic duct, but as pointed out in 1929, this proceedure is followed, first by a temporary decrease in gastric secretion, followed by a hypernormal secretion due to the increased length in the intestinal phase of digestion, and the decreased emptying time of the stomach. Berg and Jobling also report the occurrence of duodenal ulcer following production of a biliary fistula.

Jejunal ulcer has also been reported by Ivy and Fairley as a result of having

1 cm. or more of gastric mucosa umbilicated into the lumen of the stomach. This develops at the line of suture and is believed by these workers to be analogous to suture line ulcer in gastroenterostomy in humans. It should not be omitted that now and then authentic cases of duodenal ulcer have been reported in the literature in which an acidity or achyliagastrica has been present. This does not detract from the fact that acids are a factor in the production of ulcer but it indicates that there are other factors, which if present, will produce ulcer.

5 *and* 6. *Partial and Subtotal Gastrectomy.* Duodenectomy can also be conveniently considered in this connection. Pannett is the only man thus far discovered in the literature that advocates duodenectomy, nor is he clear as to the details of his operation: that is whether he resects the pylorus as well as the duodenum. Mann and Bollman claim that duodenectomy very often carries jejunal ulcer in its wake.

Gastrectomy, either partial or subtotal is the last operation which we have to consider. That it seems to be the operation of choice is amply borne out by the great number of eminent surgeons that employ this method of operative proceedure in preference to any other, namely, Deaver, Berg, Klein, Lake, Lewisohn, Wookey, Winkelstein and Wright.

On this continent, Lewisohn is the strongest advocator of subtotal gastrectomy, claiming that by such procedure he is able to produce a condition of anacidity, i.e., absence of free hydrochloric acid. He has followed his patients and finds that achylia gastrica developed in about 35% of his cases and that ferments were present in normal amount in 15% of his cases, and diminished in 50% of cases. The explanation of his results is sought in the theory that the pyloric antrum mucosa is essential for the action of the secretagogue substances, necessary for acid secretion. Both Klein, Winkelstein and Berg agree with this hypothesis. But Klein goes further and explains that, though the gastric phase of gastric secretion has been removed, yet, the psychic and intestinal phases still remain. In many cases he finds a delayed development of anacidity. Berg finds that the stomach must be resected to the incisura angularis before anacidity will develop. When subtotal resection is done, Lake finds that the total acid is on an average less than 10, with the average total chloride of 29. He also finds that the remaining portion of the stomach hypertrophies, that emptying is rapid and that motility is well preserved. None of these workers have ever found a primary anaemia develop consequent upon the achyliagastrica which is often produced by such heroic measures. The incidence of jejunal ulcer is also very small in every case. The patients all do well and show no lowered resistance or other signs of inadequate digestive function. Brenziger also reports that hypertrophy of remaining portion of the stomach occurs, following gastric resection. He also adds the interesting observation that, in a Billroth I operaton, the waves of contraction begun in the stomach, pass over the suture line and are picked up by the jejunum. At first these contractions are rapidly carried on but after some time the emptying rate of the stomach is somewhat reduced, possibly due, as Alvarez pointed out, to the fact that distension of the bowel causes delayed emptying of the stomach.

Finally, there is to be considered, the experimental work on gastrectomy, in order to see if experimental findings are capable of guiding our actions, and rendering the explanations of results on a less empirical basis.

In 1926, Portis and Portis performed subtotal gastrectomy on dogs and at the same time provided the animal with a Pavlov pouch. These animals developed a lack of free acid but a high combined acidity was noted. But they explained their results on the free regurgitation which ensued, following operation. Later, Portis showed that the bacterial flora changed, due to the lack of acidity and that the alkaline medium of the intestinal and pancre-

atic juices made conditions such that the flora was almost identical with that of the lower bowel. That is, the flora became almost faecal in character. This he believed was assisted by the more rapid emptying rate which obtained, following operation.

In 1932, Fairley, Ivy and Strauss studied the effects of subtotal gastrectomy in dogs, with a Pavlov pouch. They used the Billroth I type of operation, carried out as nearly as possible under the same conditions as obtain in operative surgery in humans. They found that there was a decreased chemical phase of gastric secretion. In 50% of their dogs hypertrophy of the remaining portion of the stomach occurred and with this hypertrophy a return to normal acid values occurred in 3-5 months. If no hypertrophy took place, then the acid values were low. Ivy believes that the hypertrophy was the result of polyphagia which developed in 9 of his 12 dogs. The emptying time of the stomach was much reduced and remained so, whether hypertrophy took place or not. Jejunal ulcer developed in 3 of the 12 dogs, but this ulcer did not develop until hypertrophy had taken place and free acidity had returned. With total gastrectomy, Ivy has found that hypertrophy or dilation of duodenum or oesophagus does not take place, and that enteritis and a secondary type of anaemia, controlled only by iron and cod liver oil, simultaeously develops. These dogs ate slowly and often, because of the great amount of undigested residue. Mann and Graham confirmed these findings in part, but found no anaemia. The dogs lived moderately normal healthy lives.

And there might be mentioned a case presented by Connell in which a fundectomy had been done. The results were good and were explained by the fact that the removal of acid producing glands allowed the ulcer to heal. Oddly enough, this seems to be a rational sort of proceedure, but does not even seem to be considered in the literature reviewed, as a possible solution to the difficulty.

There is just one more observation that might be added. Ivy and Farrell in a preliminary report, claim to produce a temporary achylia gastrica in dogs by placing 250-300 cc. hot water, 70-75° C. in the stomach for 1 minute. This is repeated every 6-10 days. If a permanent achylia is produced, it is difficult to keep the dogs up to standard. Winkelstein has also reported the production of a temporary achylia for some time by the use of atropine.

From the above discussion we may conclude that gastroenterostomy should not be used in the presence of hyperacidity, hypermotility and follicular gastritis. That is, it is contra-indicated for any condition other than stenosis due to fibrosis. For here, consequent upon the chronic condition, decreased peristalsis (atony) and decreased acid secretion with smooth atrophic gastric mucosa results, thus removing the factors mainly responsible for jejunal ulcer.

Where the ulcer is present, with the associated hyperacidity, hypermotility and follicular gastritis, and, providing it is an indolent type of ulcer, then partial gastrectomy is the operation of choice.

SELECTED REFERENCES:

1. Alvarez: Mechanics of the Digestive Tract. N.Y. 1925.
2. Ryle: Gastric Function in Health and Disease. 1926.
3. Hurst & Stewart: Gastric and Duodenal Ulcer: Ox. Med. Pub. 1929.
4. Mann & Bollman: J.A.M.A. 1932, 99, 1576.
5. Lewisohn & Ginsberg: Surg. Gynec. Obst. 1927, 44, 344.
6. Ivy, Fauley & Strauss: Amer. Jour. Surg. 1932, 17, 427.

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**The Better Way.**

If you desire to paralyze
Your enemy, don't "damn his eyes";
From futile blasphemy desist;
Send him to ——blank——the oculist.

Walter Leaf.

# A PSYCHIATRIC VIEWPOINT IN MEDICINE

By D. G. McKERRACHER, '35.

Despite frequent allegations to the contrary, every professional man is eager to find out how to improve the calibre of his service to the public. It is the purpose of this article to show the medical student how he can make a revolutionary improvement in the service, which he intends to offer, by the early acquisition of a psychiatric viewpoint.

In its broadest sense a psychiatric viewpoint considers medicine the science of the alleviation of human suffering. It considers human suffering to be due to aberrations in the physical and psychical components of integrated human personality. To illusstate: a patient comes to a physician with a badly crushed hand. He is desperately unhappy and seeking assistance. To the psychiatrically trained physician, this unhappiness is due not only to the physical factors, that is. tortured nerve endings and disturbed function, but also to the whole trend of associations related to the incident. These would include such things as anger directed at the responsible agency, annoyance at the temporary inconvenience and dread as to how this disaster will affect his future. The psychiatrically inclined practitioner unravels the separate physical and emotional strands which go to make up the sum total of the individual's suffering, treats each on its own merits and thus relieves in toto the bulk of this particular anguish.

In order to understand the benefit of a psychiatric viewpoint to the General Practitioner, it is essential first to arrive at a comprehensive psychiatric understanding of the General Practitioner himself.

The General Practitioner is an individual who wishes to obtain his guarantee of social security in return for service rendered to society. Now this service needs must include attention to, comprehension of, and assistance in solving the problems causing suffering in the individual.

To enable him thus to serve, the general practitioner is equipped with or strives to equip himself with the following characteristics.

1. **Inteiligence**—A natural endowment, in amount greater than that of his average fellow men, with capacity to mentally comprehend and make use of the information brought to him by his senses. Thus the medical student is enabled to gather from lectures, books, clinics and practical experience a fund of sensory impressions concerning a particular problem, for example: diabetes. From these inflowing sensory impressions he is able to form a mental image of this condition including all its features. This mental image is thus stowed away to be added to and altered from time to time and to be recalled for use when the occasion demands it.

2. **Knowledge**—This is the collection of mental images thus formed by the application of his intelligence to the particular stimuli offered during course and practice. Unlike intelligence which is limited by birth, the capacity for knowledge knows no limits, but is constantly increased as one applies oneself to stimuli.

3. **Technique**—This is the habit training of motor mechanism enabling the budding physician to perform motor acts with ease and dexterity. Neither intelligence nor knowledge will render the student able to deftly suture a severed nerve until practice has beaten a worn path through the habit forming maze of the cortex.

4. **Personality**—This is the impression, the integration of physical and mental factors, that an individual

makes on those with whom he comes in contact.

Thus the stimulus which one person gives to another in appearance and behaviour regulates the way the person stimulated will respond. The way the personality of the physician registers on the patient affects three vital constituents of practice.

1. The act of selecting the physician to consult.
2. The fact of adhering rigidly to the routine laid down by the physician
3. The emotional reaction to the physician such as gives to the patient the confidence and reassurance so essential in regaining lost well-being.

5. **Purpose.**—This is the philosophy of the physician. May it be stated as the desire to employ intelligence to apply the knowledge of the principles of medicine, previously grasped, to the particular physical problems of the individual concerned, to use the technique acquired in the treatment of the patient and finally by the contact force of his personality to guide the patient to recovery.

Thus the average medical student plods through his course, armed with and developing this quintet of principles, intelligence, knowledge, technique, personality and purpose.

Now let us to this add a sixth, the psychiatric viewpoint. Now only does our conception of purpose become really and truly broadened to include the alleviation of the sum total of human suffering. The difference created by this addition is that instead of applying our quintet to just the physical components of the patient, we apply it to the individual as a whole. That is the physician uses his intelligence to aid him in arriving at a comprehension of the whole situation of the individual, interpreting this situation in terms of the knowledge, that he has gained in previous studies on human personality. His then perfected technique of directing people enhances the force of his personal contact with them, stimulating in them the physical and psychic response necessary for the relief of their suffering. This viewpoint accepts the obvious fact that this suffering is, to a considerable degree due to physical disorder, but added to this the affirmation that much of this anguish can be laid at the door of concomitant emotional disturbance. The mechanisms of the birth of this emotional disturbance is a logical one based on fundamental principles and in the hands of a comprehending physician its resolution follows equally logical lines.

Having taken a psychiatric glimpse of the physician, let us now cast our glance at the patients. We find the patients of the general practitioner to represent types lending themselves to classification. In the interest of lucidness we shall make such an arbitrary classification.

1. **Acute Organic Disease.**—In this group are included the rank and file of the clientele of the average physician, the accident cases, infectious diseases, etc. The psychiatric therapeutic approach to this group has been outlined above. First the chief factor, the physical ailment is treated, then ample time it taken to examine and resolve conflicts directly related to the disorder. At this point it is apt to consider a fact essential in all practice. Beware of over-emphasis of the dangers in connection with the disease and equally beware of suggestions which may be construed by the patient as indicating a disorder which really does not exist and which the physician never considered to exist. The scars of psychic trauma left by careless physicians in these two instances throughout general practice are multitudinous and stand as a disgraceful return to the confidence placed by the public in the profession. The third factor connected with this group of people, where the physician may become involved, is an optional one. Many of the rank and file of citizens have personal problems which they would like to discuss with an individual possessed of intelligence. understanding and sympathy. From time to time they will bring these to the attention

of the physician in whom they have confidence rather than to the psychiatrist or minister, for obvious reasons. The physician who has schooled himself, as later we shall suggest he should school himself, will be in the ideal position to understand and give advice to the mutual profit of the patient and himself.

2. **Chronic Organic Disease Without Functional Symptoms.** — Tuberculosis. diabetes mellitus, pernicious anemia and similar chronic disorders fall in this group. Here the psychiatrically-minded physician encounters the problem of maintaining moral through the prolonged annoyance of protracted illness. Wrong viewpoints on life, conflicts and unhappiness arise readily in cases like these, and unless detected early, are proven to develop into neuroses or even psychoses.

3. **Acute and Chronic Cases with Functional Symptoms.**—The essential problem here is the diagnostic one. Here the psychiatric inclinations of the physician enable him to separate the symptoms which are real from those which have an apparent basis. This insight on the part of the physician is the result of his knowledge of the conditioning mechanisms which may maintain a symptom in original or altered form long after the etiological factor has disappeared. Having thus analyzed the components of this combined condition the physician treats the physical element as his medical school has carefully taught him to and treats the functional element as we shall now point out.

4. **Functional Cases.**—These are the group of psychoneurotics who are the bane of the practising physician and the prey of the osteopath, the Christian Scientist, and the toe-twisting quack. The treatment of these cases by the average physician follows one of two courses. He either dignifies their complaint with a pseudo scientific name and treats them with elaborate rose water therapy or else more truthfully declares them physically fit, dismissing them with the shrug that denotes his inability to deal adequately with the situation.

In the former case temporary relief is obtained, but soon the symptoms return in another form. The result is that the individual is forced to lead a life of self-imposed invalidism. In the latter case the patient turns to a less ethically disposed physician or drifts to paths filled with those of like ill, flocking to the haunts of the charlatan. But in both instances the physician fails to realize that the suffering of the patient is real notwithstanding the absence of a physical basis and that this functional element would respond to judicious therapy in the hands of a competent individual. It is with this large and suffering group that the psychiatrically trained physician finds himself alone fitted to deal and to receive the rewards in dollars and satisfaction denied to his less broadly trained colleagues.

The treatment of these cases is based on an understanding of them. The acquisition of technique of determining this is well within the limits of every medical student. No mystic psychoanalysis and no elaborate nomenclature is necessary to enable a student to take a careful history, to make a personality study and to elicit a basis of fear, fatigue or feelings of inferiority for the expressed symptoms of the patient. Nor need the astute physician have the experience of a pedigogue to apply the principles of mental hygiene in devising a re-educational program to readjust this unfortunate being to society. For it quite lies within his power to see that the gastric symptoms of the Mining Mogul's wife are due to conflict arising in her mind concomitant with her failure to adjust herself to that level of society to which speedily acquired affluence has raised her; and with sympathy and understanding to guide her in "regaining her health" or recovering from a "nervous breakdown" by directing the healthy expression of personality to such outlets as active philanthropy, thus dissipating her conflicts,

increasing her satisfaction and curing her illness.

5. **Psychotic Cases.**—To the attention of the physician comes this group of people. They are those with the original endowment of an unstable emotional constitution upon whom the blows of life have fallen, producing defense mechanisms so anti-social in character as to ultimately require institutional care. The psychiatrically informed physician realizes here a two-fold duty. He must not only assist in diagnosis and commitment of full blown psychotic cases to the proper custodial care, but he must also always be alert for signs of these developing traits in their infancy. By detecting among his practice, cases of early schizoid and psychopathic trends and by referring these individuals to suitable psychiatric clinics, he performs a noble service in the field of preventative medicine. Nor is a psychiatric viewpoint and psychiatric training of service to the general practitioner alone. The specialist finds these principles closely interwoven with his duties. Each particular specialty has its own peculiar group of psychic pitfalls from which to be on guard. The hospital internist needs must know the emotional conflicts and dreads arising in a patient's mind as he enters this strange and awful sanctum. The specialist in internal medicine finds psychiatric principles playing a dual role in his experience. He encounters repeatedly physiologically produced mental disorder as well as that of psychic origin. These physiologically produced mental aberrations are vividly portrayed in such conditions as pernicious anemia, thyroid and other ductless gland abnormalities, acute toxic delirium, general paresis, and pellagra. The psychically produced mental trauma associated with internal disease are too well known to require more than passing mention. Emotional shock concomitant with such conditions as tuberculosis, cardiac disorder and venereal disease causes much preventable suffering Hay fever with its annoying discomfort tends to neurosis. Ductless gland aberrations producing unusual physical appearance result in inferiority feelings that require sympathy and resolution. Surgery with its dramatic episodes is a hotbed of emotional dissension to the patient. Judicious recognition and treatment of the conflicts here improve the patient's raction to the operation and speeds his recovery.

**Obstetrics and Gynaecology.**—The relative emotional instability of women render them quite susceptible to conflict concerning the reproductive phase of their existence. The physical and emotional disturbances connected with childbirth are breeding grounds for mental disorder. So common is the post-puerperal psychosis, that this phase of life is of intense interest to the psychiatrist. In any event the obstetrician needs a skilled and sympathetic hand to guide his patients through their mental hazards.

**Paediatrician.**—To no branch of medicine is the preventative side of psychiatry more aptly applied than to the practice of paediatrics. The habit training problems of children are often difficult to solve and always of vast importance.

Now, having attempted to indicate the value of a psychiatric viewpoint, the question naturally ensuing is, how is the student to obtain this psychiatric training? What opportunities are there afforded to him by which he can acquire a fundamental knowledge of the mechanisms of human behavior and the processes by which these mechanisms are influenced? The answer lies with the student himself. He alone can by reasoned application of psychiatric principles to the abundant material offered in his course, develop this psychiatric viewpoint and become proficient in its technique. Internship and practice develop this indispensible weapon of the doctor's armamentarium.

We shall endeavour to indicate the mileposts which the student will pass.

*Books.*—From judiciously selected volumes on the scientific principles of human behavior the student can com-

mence his study. Those books need not be deep and time consuming treatises, but simple, readable and even entertaining discourses on fundamentals of the human mind such as are afforded by the works of men like Dorsay, Pitkin, Adler, Watson and even Freud. From this group of fairly popular volumes the student will reject what smacks of individual system but extract from each contribution what seems like truth, and with this build his own composite viewpoint concerning human personality. To this he will add the experience which he gains from reading, especially of literature of a good classical nature.

*Human Contacts.*—In the acquisition of his psychiatric viewpoint the student progresses from this theoretically evolved framework to a more practical application. The principles that he has learned and formed, he applies to the behaviour of actual humans, himself and his associates. Thus he begins to correct and crystalize his views. Remembering that this purpose is to make of himself a physician, let us return to our guiding quintet mentioned early in the article. The purpose is as stated to acquire an understanding of his fellowmen. Then he applies his intelligence to the task of collecting knowledge of them. From the resulting contact he will evolve the technique and personality that he will be able to employ to influence human behaviour in later years.

*Psychology and Psychiatry.* — The first three years of his academic course afford him an opportunity to test his growing conceptions of human personality with that conception held by the scientists of psychology. He is thus able to alter his ideas where such alterations seem indicated. Finally in his graduating years he is brought into contact both practically and theoretically with the mental aberrations in their exaggerated stages. From his previous training he now gets a conception of psychiatry which is not one of an incomprehensible collection of dis-

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ease entities such as the layman believes, but rather a study of dynamic developing processes resulting from an understandable interaction between physical and psychic disorder such as have been discussed throughout this article.

*Internship.*—Thus armed with a fundamental conception of the psychic factors in human beings he advances to a general hospital internship. This is the period of the acquisition of technique. Here our new psychiatrically inclined medical student develops his psychiatric technique along with its physical brother. He learns to take a complete psychiatric history. He learns to deduce from this the significant factors, and he learns to influence the thought processes of the individual along healthy channels. Thus equipped, the student advances into the field of General Practice or of speciality, ready to meet the psychic pitfalls that he will encounter.

**Summary.**—In this article we have tried to show the value of a psychiatric training and viewpoint to the general practitioner and to the specialist. We have endeavoured to offer suggestions as to how this viewpoint might be obtained.

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### The Traveller's Curse After Misdirection.

(From the Welsh)

May they wander stage by stage
Of the same vain pilgrimage,
Stumbling on, age after age,
Night and day, mile after mile,
At each and every step a stile;
At each and every stile, withal,
May they catch their feet and fall;
At each and every fall they take,
May a bone within them break,
And may the bones that break within
Not be, for variation's sake,
Now hip now thigh, now arm, now shin,
But always, without fail, **the neck.**

Robert Graves.


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# PRIMITIVE OBSTETRICS

By MARGARET A. DALEY, '37.

There are many procedures, both medical and surgical, that are practised at the present day, which were not known twenty years ago, or forty years ago. Certainly the vast majority were not known a century ago. When illness and disease descended upon the luckless individual, he died, or recovered, as the case may be. But with the advent of present day methods, the mortality figures of our various diseases have been revolutionized, in some cases, beyond all dreams of realization. But despite these advances, despite modern surgery, aseptic technique and expert supervision, the mortality rates in the obstetrical fields do not show the same parallel advance over the times when child bearing was all in the day's work. It is for that reason that a survey of some of the ancient obstetrical practices may be of interest, nor is it necessary to search old documents for early obstetrical practice, for such primitive methods can be studied, first hand, among the primitive tribes found in different parts of the world. It is true that some obstetrical lore may be gleaned from the Bible, but it is not necessary to search all historical records with material fresh at hand.

All tribes have their own ceremonies, their own way of expecting and greeting the new personality as it enters the world. And all the new arrivals do not get the same reception. But, however much the frills are varied, yet there remains one very significant fact, namely that labour is short, comparatively easy, and appears to have a minimum deleterious effect on both mother and child. Many factors enter in allowing this ease of delivery, possibly one of the greatest being the proportion between child and pelvis, which appears to be fairly constant and optimum in pure races. Intermarriage of races disturbs this proportion and makes labour a more difficult or even impossible procedure, due to the resulting disproportion between mother and child. In fact, among the Sandwich Indians, if the head does not fit the pelvis, the obstetricians (the old men of the village) consider the child a half-breed and kill it

Generally speaking, the idea of privacy, even to very rigorous seclusion is dominant among most tribes, though among the Mohammedans and peoples of the Sandwich Islands, labour is a public affair, the bank of a running stream usually being the site of election when, following delivery, both mother and child may plunge into the stream and be cleansed.

Dr. C. C. Gleaves describes the custom practiced amongst the Eskimo. The mother is supposed to remain away from the tribe for about five days, and to subsist solely on a small piece of dried fish. She proceeds as follows, according to Dr. Gleaves' description: "I found the woman in a snow pit, oval in shape, about two feet deep and seven feet across, with a few spruce boughs thrown around the margin as a windbreak. The woman had further prepared the chamber by scattering a thin layer of dried moss, saved for the occasion, upon which she spread a reindeer skin. There was no covering of any kind. The woman was on her feet, with her buttocks resting on her heels, and having severe bearing down pains, coming faster and faster until almost continuous, when the sac ruptured. Labour progressed normally until the end of the second stage, when after a rest of forty-five minutes the placenta was expelled. She then took a piece of sinew from the hock of a deer, ligated the cord and severed it with a piece of serrated flint. She then washed the babe in the snow, although it kicked and squealed lustily at such a cold re-

ception.'' Despite these rigorous conditions, the mortality among infants and mothers of the Eskimo race compares very favourably with ours.

The Hindus banish the expectant mother (frequently a mere child) to an ill-lighted, badly ventilated hut, where she is in solitary confinement from two to four weeks. She gets practically nothing to eat and as a result over 30% of such women die. On the other hand, among the natives of Calabar, the relatives and friends of the woman in labour gather round, singing, laughing and indulging in pleasant conversation to give the impression that the patient is not suffering. At the same time the father is put to bed in woman's attire and sighs terribly as if in great pain.

As stated above, labour is a solitary procedure in many tribes, but in most some sort of midwifery prevails. Frequently the mid-wife is a relative or neighbour, but where professional midwives appear, they are usually qualified by their age and the number of children they have born. Mid-wifery was probably highly developed among the early Egyptians and it is known that in difficult cases a physician was called in. It is interesting to note here, that for many years in the early days of medicine, it was deemed below the standard of a medical man to act as a midwife and one Dr. Veit of Hambourg was publicly branded for acting as such.

With regard to operative procedures, not much has been attempted by primitive tribes, although varied technique for hastening delivery is used. Among the Sclavonians in a prolonged labour, an attempt is made to shake the child out, which proceeding frequently causes inversion of the uterus. In Russia, if the latter accident occurs, the patient is strapped to a board, and the uterus is shaken back into place, as one would shake a pillow into a pillow-slip. It is recorded that one tribe place a board across the patient's abdomen and, with a man at each end, teetering back and forth, pressure is brought to bear on the luckless mother and child. Other tribes use shock and emotion to aid the process, such as a volley of musketry at crucial moments. Dr. Forwood comments on the case where an Indian squaw was placed on the prairie with a warrior galloping up at full speed, swerving only at the last instant.

According to Dr. Gardner, the operation now known as Caesarian Section was recorded as far back at A.D. 180. This operation received its name from the fact that the Roman e.g., Caesarian laws demanded that a dead pregnant woman must not be buried until the foetus had been removed. At the time of Caesar the operation was thus done only on the cadaver. The first authentic case recorded, of Caesarian Section, was in 1580 and was carried out by a barber. Amongst primitive peoples, Dr. Falkin in 1879, witnessed this operation in Uganda, in which everything was washed in banana wine, the same substance being used to produce an alcoholic anaesthesia. The operator in principle did not vary much from the modern procedure, and the patient made an uneventful recovery in about eleven days.

The use of drugs in primitive obstetrics does not play an important part. One of the most interesting decoctions being used in Siam, namely, ''sapan-wood, rhinoceros blood, tiger's milk (a fresh deposit formed on certain leaves of the forest) and cast-off skins of spiders.'' This was given to alleviate the pangs of labour.

And so, it is thus, with threats, promises, incantations, cajoling or cursing that the human race has kept itself alive through the ages, nay, increased in spite of what seems to us to be medical heresy of the most extravagant kind.

References:

Hd. Fair. Am. J. Obst. & Gyn. 1925.
G. S. Englemann. Am. J. of Obst. 1888.
Newell: Caesarian Section: Appleton, 1921.

# BOOK REVIEW

GARGANTUA AND PANTAGRUEL:

Rabelais: J. M. Dent & Sons Ltd.

Once more, with pipe and book solace is found for a few moments from medical cares, by the perusal of the pages of a book, written by a doctor of the 16th century who loved life, laughed at it and laughed with it. It is good reading. Hear what the preface says about this antidote for tired academicians: "It has well been said that Gargantua and Pantagruel may be compared with one of those splendid palaces of our ancestors which a modern nose could not tolerate for more than five minutes if it were to encounter there certain contemporary odours. In Rabelais there are sudden dunghills at the turning of the great marble staircase, in corners of the fountain court, in the long gallery, in the hall; but his grossness in frank, naive, rustic, joyous, natural and great gusts of laughter blow across it like the wind through a farmyard . . . . The whole of the Renaissance is in Rabelais, the intoxication of recaptured learning, the dreams of Columbus-voyages of the spirit, the red-hot appetites, the cruelties."

Need more be said! The doings of these two mighty fellows can be recounted over the lunch plates with all the zeal of a twelve year old for the latest cowboy movie. There is nothing like a drink of Rabelais when the medical intestines are sluggish!